

Ann Arbor WWTP

BIOSOLIDS MANAGEMENT

Agenda

- ▶ Context for Discussion
- ▶ Background on biosolids management
- ▶ PFAS in biosolids
- ▶ Future plans
- ▶ Environmental Commission endorsement

Current Practices

- ▶ Land Application of Lime stabilized biosolids
 - ▶ Performed by a subcontractor who land applies the lime stabilized biosolids at agronomic rates
 - ▶ Last season land applied approximately 8.4 Million gallons (1,884 dry tons) on 434 acres.
- ▶ Landfilling of centrifuge cake
 - ▶ Typically, Mid-November through May
 - ▶ When land application is not possible due to the fields being too wet
 - ▶ When prohibited by frozen soils, defined by EGLE as Dec 21 thru March 21
 - ▶ Landfilled 2,157 dry tons last season

Land Application Benefits

- ▶ Prevents landfill space being used by a product that can be recycled
- ▶ Recycling organic material back to soil
- ▶ Recycling of nitrogen, phosphorus, potassium, and micro-nutrients
- ▶ Reducing the reliance on commercial fertilizers by farmers

Land Application Drawbacks

- ▶ Requires a lot of semi truck trips to haul to the application sites
- ▶ Weather effects ability to land apply and WWTP has limited storage
- ▶ Subcontractors ability to find semi drivers to haul
- ▶ Fluctuating fuel prices
- ▶ Lack of competition (only 2 land application companies)
- ▶ Emerging contaminants (currently PFAS compounds)

PFAS RULES AROUND THE COUNTRY

- ▶ Maine banning all biosolids land application no matter what the PFOS or PFOA concentration is in the biosolids
- ▶ EPA considering listing PFOS and PFOA under the CERCLA Regulations
- ▶ Health advisory limits coming for more PFAS compounds. These usually drive limits that are put in place after the health advisory is issued

CURRENT BIOSOLIDS PFAS REGULATIONS IN MICHIGAN

- ▶ Required sampling for 28 compounds
- ▶ Only one of these compounds currently have a limit- PFOS
- ▶ July 1, 2022 change: Industrially impacted if PFOS is >125 ug/kg.
 - ▶ Cannot land apply
- ▶ PFOS <125 ug/kg but >50 ug/kg immediately notify EGLE
- ▶ Source reduction if <50 ug/kg

Ann Arbor Results for PFAS in Biosolids

Analyte	Samples	NON-DETECTS	DETECT RANGE (ug/kg)
HFPODA	8	7	<1.0-26
NetFOSAA	14	12	<1.0-9.14
NMeFOSSA	14	13	<1.0-1.92
Perfluorobutanesulfonic Acid	14	13	<1.0-46.9
Perfluorobutanoic Acid	14	13	<1.0-144
Perfluorohexanoic Acid	15	9	<0.3-180
PFOS (only analyte with limit)	15	7	<0.3-178
Perfluoropentanoic Acid	14	13	<0.3-58.6

LANDFILL BENEFITS

- ▶ Easier on plant operations as solids can be disposed of more reliably
- ▶ Less semi truck load per day 1-2/day compared to up to 20 for land application
- ▶ Less risk of emerging contaminants being spread in the environment

LANDFILL DRAWBACKS

- ▶ Possible adverse affects on biological phosphorus treatment (working on side stream treatment of centrate)
- ▶ Limited Landfill space available
- ▶ Landfill acceptance
- ▶ Possible odors at the wwtp or at the landfill which could deny the load
- ▶ Not recycling nutrients and organic matter back to the soil

Cost comparison

- | <u>Land Application</u> | <u>Landfilling</u> |
|-----------------------------|---------------------|
| \$336.94/dry ton | \$281.73/dry ton |
| <u>Annual Cost*</u> | <u>Annual Cost*</u> |
| \$1,626,502 | \$1,459,643 |
| (\$1,018,317 + \$608,185)** | |
- ▶ *Based on 5,181 dry tons /year produced
 - ▶ **Land Application can only occur for 7 months at most out of the year.

RECOMMENDED BIOSOLIDS DISPOSAL METHOD GOING FORWARD

- ▶ Due to the risks and unreliability of land application, Landfilling should be our main method of biosolids disposal
- ▶ We could keep land application as a backup in the warm summer months if odors become an issue
- ▶ Continue Centrate treatment study and implement findings to reduce effect on plant's Phosphorus removal
- ▶ Continue to address odors from centrifuge cake
 - ▶ Carbon scrubbing at truck load out (from odor study)
 - ▶ Addition of biodigester to stabilize the odors in the biosolids
 - ▶ Continue the use of Planet Breeze to reduce current centrifuge cake odors
 - ▶ Continue monitoring Carbon system in Solids handling building to ensure its operating correctly